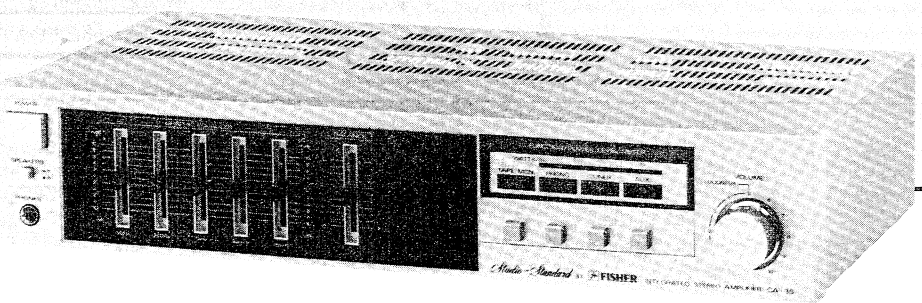
SERVICE MANUAL

FISHER

CA-35

Integrated Stereo Amplifier

(EUROPE)

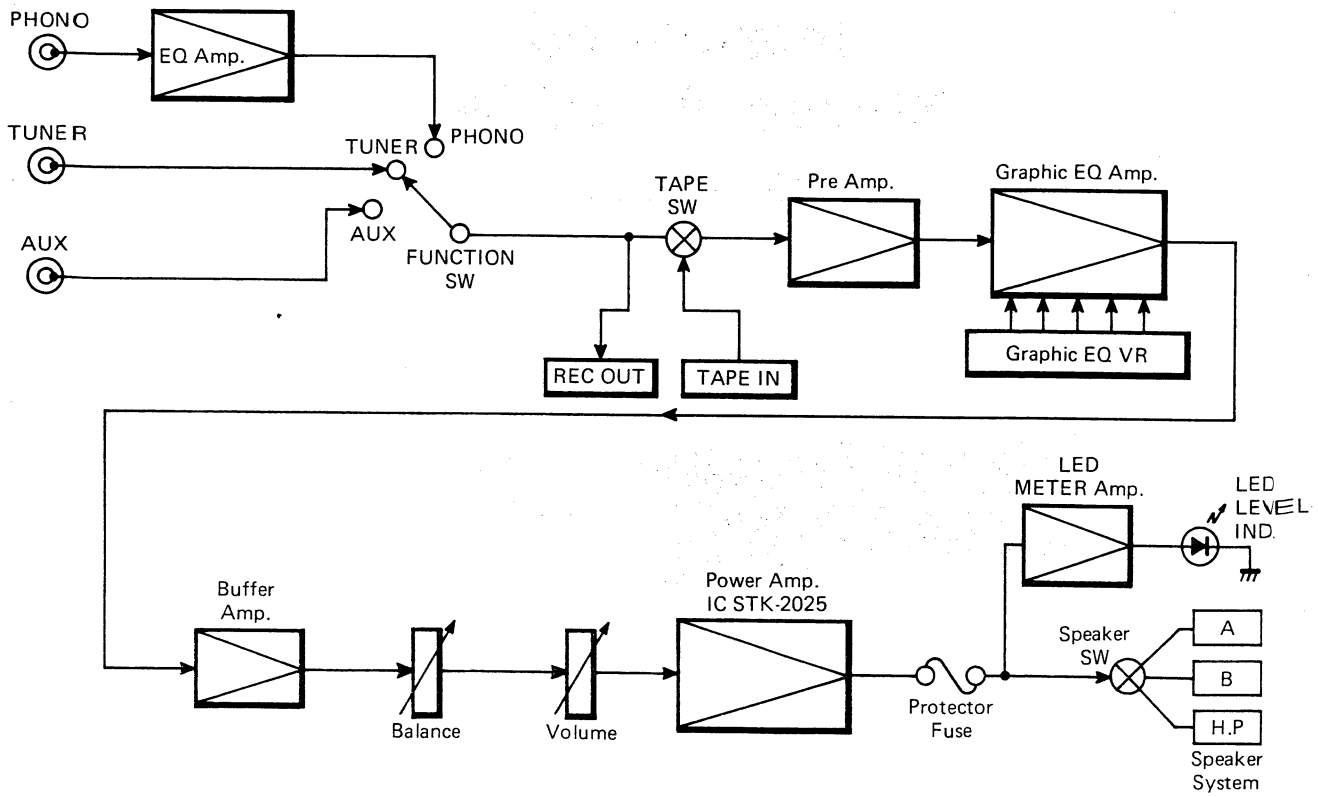


The first name in high fidelity

CONTENTS

Functional Block Diagram 2
Specifications 3
Disassembly Instructions 4
Recommended Test Equipments 5
Harmonic Distortion Test 5
Cabinet & Chassis Exploded View 6
Parts List 7
Connecting Diagram 8
IC Equivalent Circuit & Block Diagram 9
Parts List 10,11,12,13
Printed Circuit Board (Bottom View) 13,14,15,16
Point to Point Wiring Diagram 17,18
Schematic Diagram 19,20
Semiconductor Lead Identification 21

FUNCTIONAL BLOCK DIAGRAM



SPECIFICATIONS

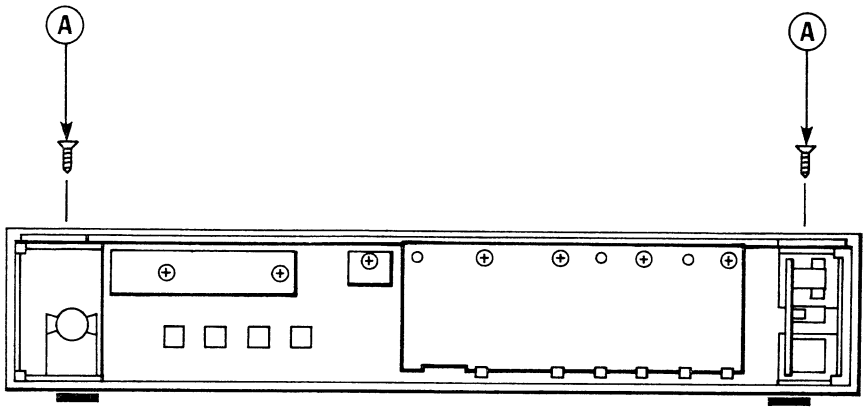
AMPLIFIER		CA-35
POWER AMPLIFIER SECTION		
Minimum RMS sine wave power per channel within stated bandwidth at no more than stated distortion and with 8-ohm load		20 Watts
Power Bandwidth		40 Hz – 20 kHz
Total Harmonic Distortion		0.9 %
I.M. Distortion		0.9 %
Speaker Damping		>20
PREAMPLIFIER SECTION		
Frequency Response		
	Phono (RIAA)	±0.5 dB
	Aux (20 Hz – 20 kHz)	±0.5 dB
Input Sensitivity and Impedance		
	Phono	2.5 mV/50 kΩ
	Tape Monitor	150 mV/60 kΩ
	Tuner/Auxiliary	150 mV/60 kΩ
Phono Max. Input Capability		
	Phono	150 mV
Graphic Equalizer		
	50 Hz	±10 dB
	250 Hz	±10 dB
	1 kHz	±10 dB
	4.5 kHz	±10 dB
	15 kHz	±10 dB
Hum and Noise (DIN)		
	Phono	63 dB
	Tape Monitor	85 dB
	Tuner/Auxiliary	85 dB
GENERAL		
Power Requirements (50 Hz)		220 V AC
Power Consumption		120 W
AC Outlets		2
Dimensions (W x D x H)		400 x 215 x 80 mm
Weight (approx.)		3.9 kg

Because its products are subject to continuous improvement, Fisher Corporation reserves the right to modify product designs and specifications without notice and without incurring any obligation.

DISASSEMBLY INSTRUCTIONS

A. REMOVAL OF DECORATIVE PANEL

- Detach Cover by removing five screws.
- Pull out VOLUME knob.
- When Decorative Panel is removed from Chassis, the screw tightened through the Top and Bottom can be removed after the screw (A), as shown in Figs. 1 and 2, has been removed.

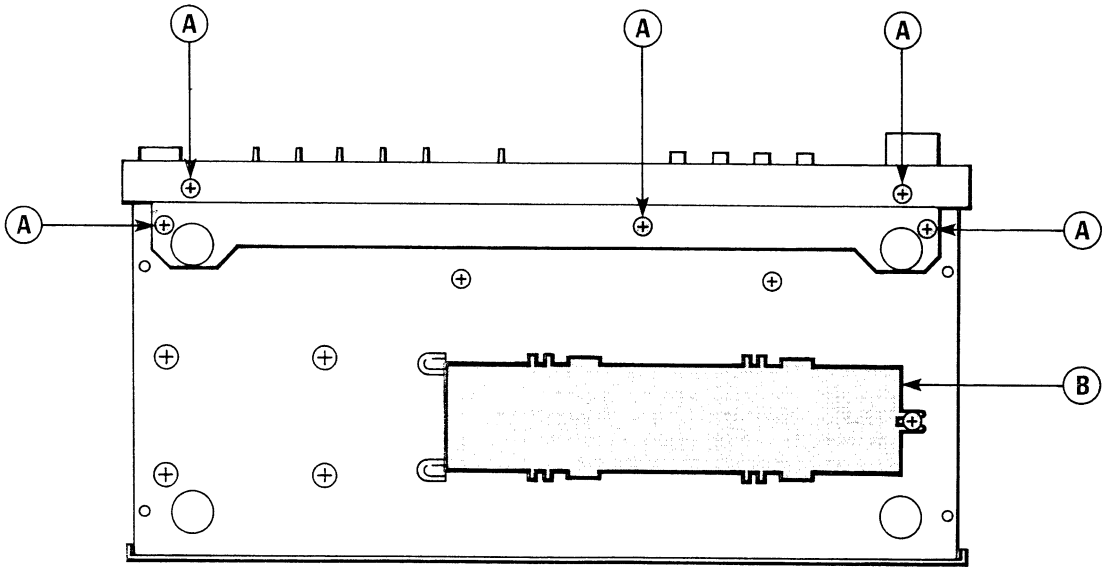


(FRONT PANEL REAR VIEW)

Fig. 1

B. REPAIR AND ADJUSTMENT OF PRINTED CIRCUIT BOARD

- The removal of Cabinet Bottom Plate (B), will give an access to the repair or adjustment work of Printed Circuit Board.



(BOTTOM VIEW)

Fig. 2

RECOMMENDED TEST EQUIPMENTS

The following test equipments are recommended to completely test and align the Amplifier:

- Line Voltage Isolation Transformer
- AC DC Multimeter.
- Accurately Calibrated AC Voltmeter.
- Oscilloscope (Flat to 100 kHz Minimum)
- Low-Distortion Audio Sine-Wave Generator
- Harmonic Distortion Analyzer
- Two (2) Load Resistors 8-ohms, 250 Watts (Minimum Rating)

HARMONIC DISTORTION TEST

CAUTION: Limit the following tests to no more than ten minutes each. Use 8-ohm resistors, with a minimum power rating of 250 watts when connecting a load across the SPEAKERS terminal.

CONTROL SETTINGS:

Unplug the AC power cord and set the front panel controls and follows:

- GRAPHIC EQUALIZER and BALANCE controls to center positions.
- POWER switch to OFF
- SPEAKERS switch to SYSTEM-B
- FUNCTION switch to AUX
- TAPE MONITOR switch to SOURCE
- VOLUME control to MINIMUM position
- LEFT CHANNEL DRIVEN

ONE CHANNEL DRIVEN:

1) Connect a low distortion audio generator to LEFT AUX IN jack. Set generator frequency to 1 kHz and output to minimum.

2) Connect an 8-ohm load resistor between SPEAKERS SYSTEM-A LEFT and COM terminals. Connect a Harmonic Distortion Analyzer and an AC VTVM in parallel across the 8-ohm load.

3) Connect the AC power cord and set SPEAKERS switch to SYSTEM-A. Turn VOLUME control to MAX.

4) Increase generator output for 20Watts RMS (12.6 volts across the 8-ohm load). Harmonic Distortion Analyzer should measure 0.9 % distortion or less.

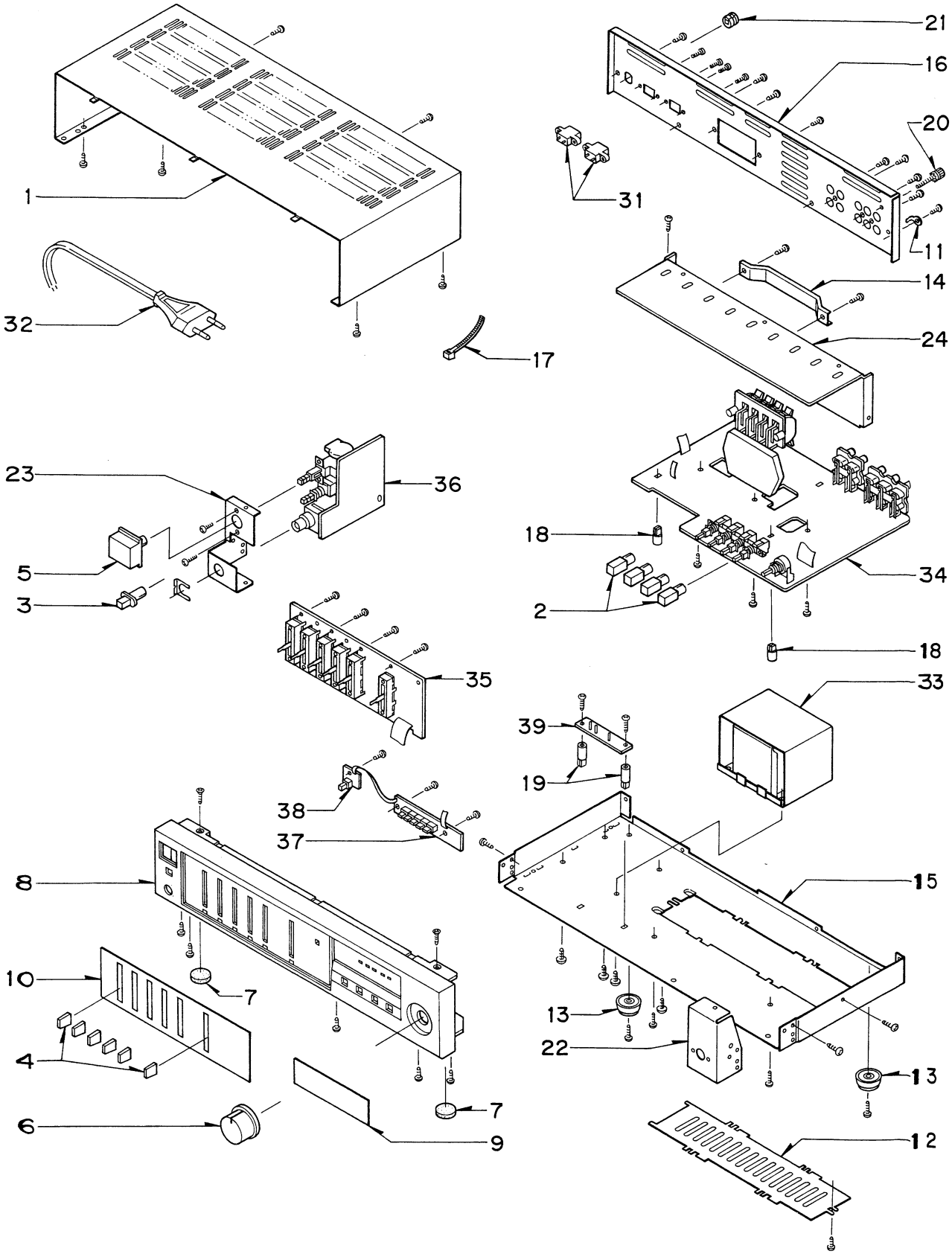
5) Repeat steps 1 through 4 for RIGHT CHANNEL.

BOTH CHANNELS DRIVEN

Connect 8-ohm load resistors across LEFT and RIGHT SPEAKERS SYSTEM-A terminals. Adjust generator output and "BALANCE" control for 20 Watts at Left and Right Channels (12.6 voltsacross the 8-ohm loads). Harmonic Distortion Analyzer should measure 0.9 % distortion or less at each channel.

CAUTION: This precision high-fidelity instrument should be serviced only by qualified personnel, trained in the repair of transistor equipment and printed circuitry.

CABINET & CHASSIS EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	PACKING PARTS LIST		
	3 9415 10300	Bag Polyethylene	1
	131 6 1169 03120	Box Corrugate-EXP	1
	131 6 2119 02131	Bag Polyethylene-EXP	1
	131 6 3069 16840	Patching Sheet	1
	141 6 1449 88300	Pad (Left)	1
	141 6 1449 88400	Pad (Right)	1
	ACCESSORIES PARTS LIST		
	131 6 2719 10801	Bag Fan	1
	131 6 4519 15700	Guarantee Cert	1
	142 6 4119 31705	Explanatory Booklet	1
	CABINET & CHASSIS PARTS LIST		
1	131 2 1410 27401	Cover	1
2	131 2 1601 64106	Knob (Function SW.)	4
3	131 2 1601 69600	Knob (Speaker Select SW.)	1
4	131 2 1601 71001	Knob (Graphic EQ./ Balance VR.)	6
5	131 2 1601 86200	Knob (Power SW.)	1
6	131 2 1601 87100	Knob (Volume)	1
7	131 2 1801 16200	Leg (Front Panel)	2
8	141 2 1119 92700	Cabinet Front	1
9	141 2 1449 56401	Plate Decorate	1
10	141 2 1449 56500	Plate Decorate	1
11	4 2379 21520	Terminal Lug	1
12	131 2 1410 27600	Cover	1
13	131 2 1801 12900	Leg (Rear Panel)	2
14	131 2 3101 71300	Metal Mount IC	1
15	131 2 3301 28900	Chassis	1
16	131 2 3306 37409	Panel Rear	1
17	131 2 3608 12700	Cramp Wire	1
18	131 2 3614 20300	Mount P.C.B.	2
19	131 2 3614 21800	Mount P.C.B.	2
20	131 2 4201 17800	Screw Ground	1
21	131 2 6111 14200	Bushing	1
22	141 2 3519 66600	Metal Mount (Right)	1
23	141 2 3519 66700	Metal Mount (Left)	1
24	141 2 3689 10900	Plate Heat Sink	1
	ELECTRICAL PARTS LIST		
31 ⚠	4 2359 74032	2P Socket (With Nut)	2
32 ⚠	4 2432 00140	Power Cord	1
33 ⚠	4 2519 73860	Power Trans	1
34	141 0 1939 00670	Main P.C.B.Assy	1
35	141 0 1939 00680	Graphic EQ. P.C.B.Assy	1
36	141 0 1939 00690	Power SW. P.C.B.Assy	1
37	141 0 1939 00700	Level Meter P.C.B.Assy	1
38	141 0 1939 00710	Power IND. P.C.B.Assy	1
39	141 0 1939 00720	Voltage SW. P.C.B.Assy	1

NOTES:

1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.
Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

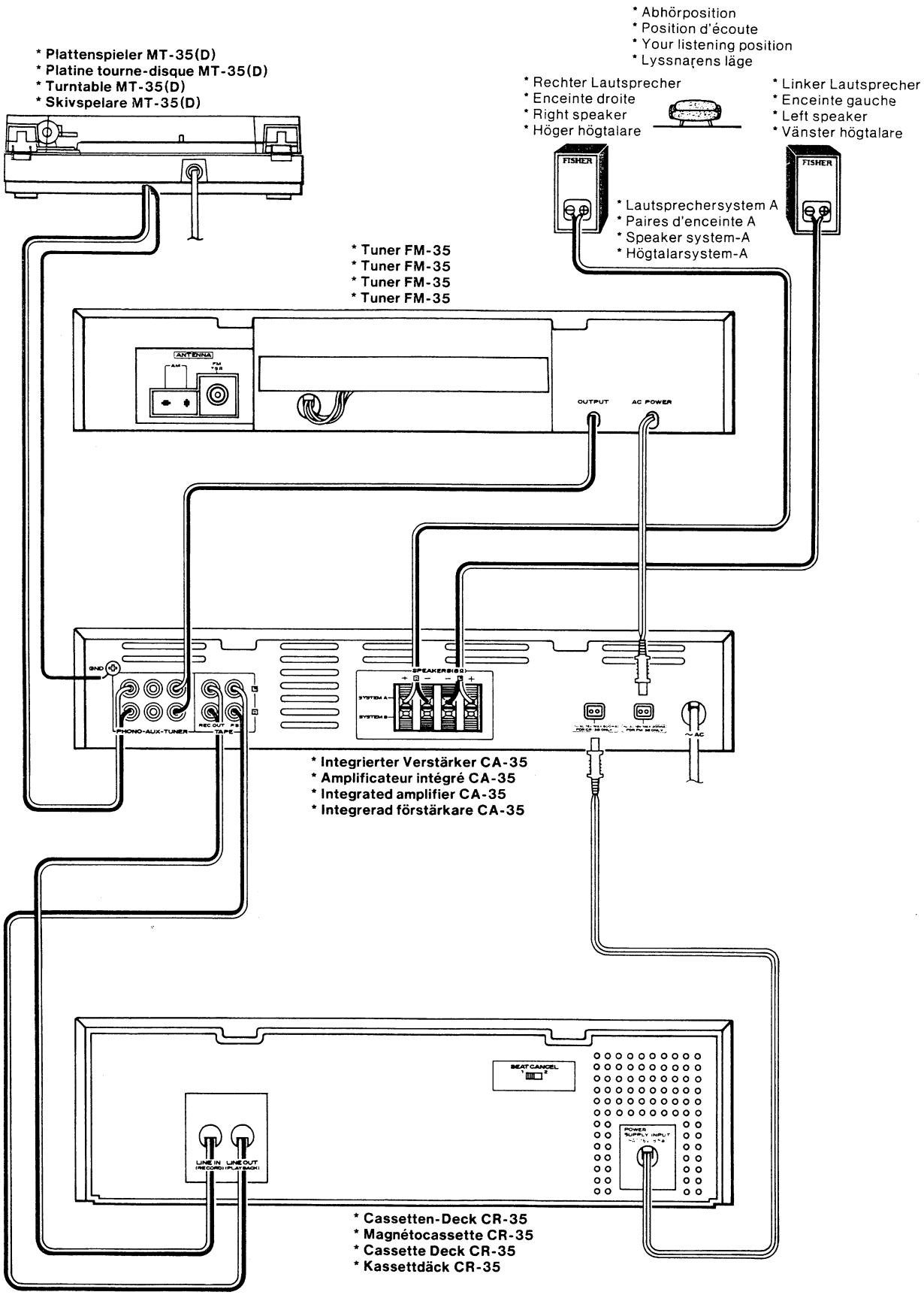
IMPORTANT NOTE

The amplifier has been factory-adjusted for operation on 220 V AC. The voltage can be changed for operation on 110 V AC by making the following changes on the amplifier inside.

- Remove the AC plug from the wall outlet.
- Remove the screws securing the cover.
- Disconnect gray lead from Voltage SW. P.C.Board No. 10 terminal, and then connect it to Power SW. P.C.Board No. 3 terminal.
- Disconnect black lead from Voltage SW. P.C.Board No. 11 terminal, and then connect it to No. 10 terminal.

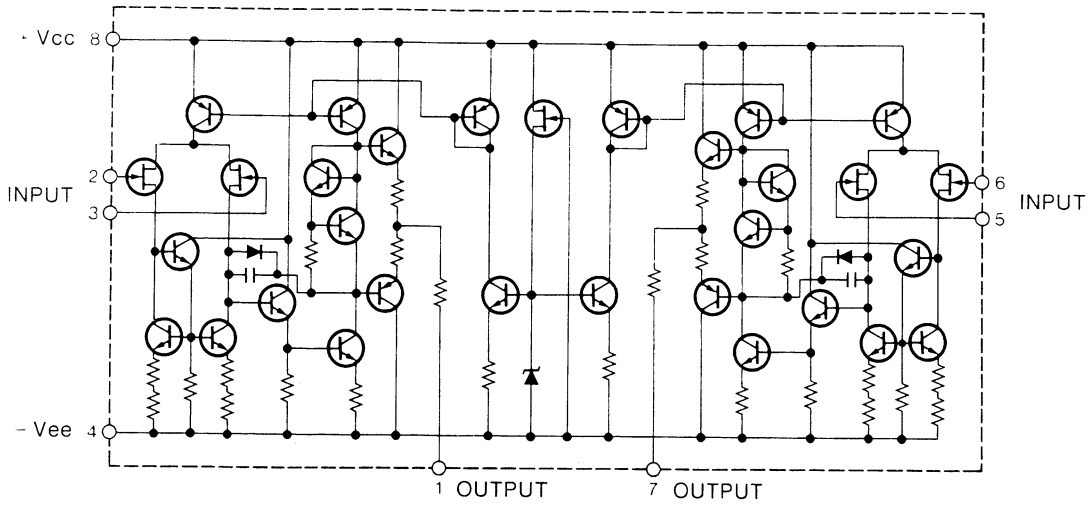
The amplifier is now ready 110 V operation. DO NOT attempt to operate the amplifier on 220 V. Damage will result!

CONNECTING DIAGRAM

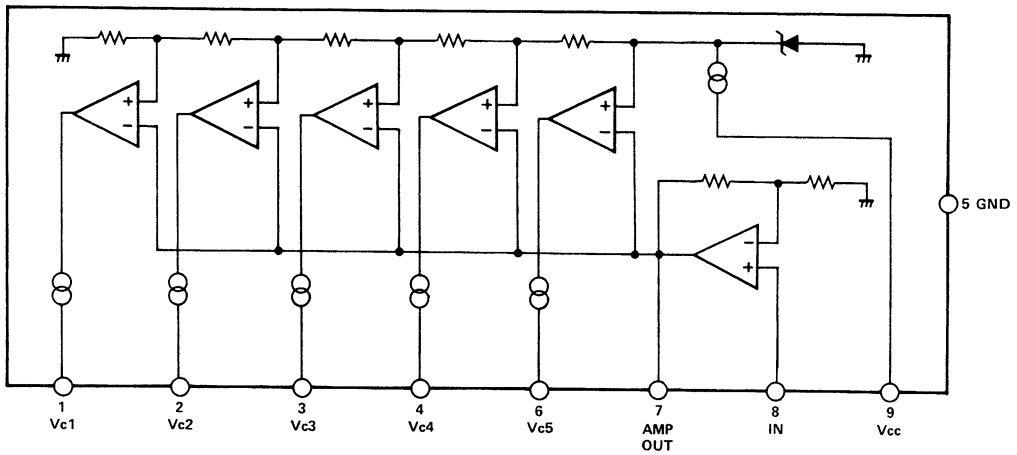


IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM

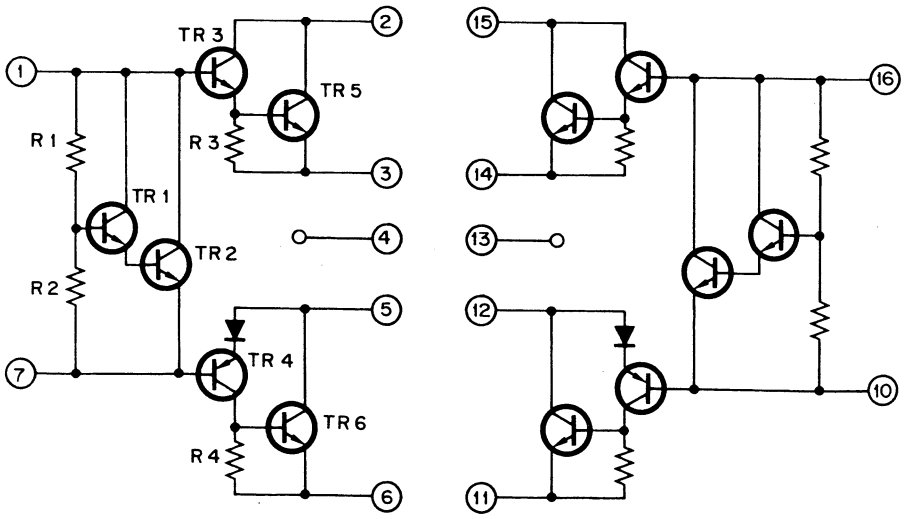
EQ AMP IC NJM072



L.E.D. LEVEL METER IC LB1423



POWE R AMP IC STK2025



PARTS LIST

Ref. No.	Part No.	Description			Q'ty
	MAIN P.C.B.Assy				
	141 0 1939 00670	Main P.C.B.Assy			1
	4 2319 76300	SW. Push 4 Key			1
⚠	4 2349 20570	Fuse T 2.5A (Speaker Protector)			2
⚠	4 2349 70260	Fuse T 2.0A (AC Line)			2
	4 2352 01700	Pin Jack 4P			1
	4 2352 01780	Pin Jack 6P			1
	4 2352 01940	Fuse Clip			8
	4 2372 01070	Terminal 8P (Speaker)			1
	131 2 6201 29800	Heat Sink			1
	141 2 3229 44600	Plate Shield			1
L101	4 2532 00420	RF Filter			1
L201	4 2532 00420	RF Filter			1
VR407	4 2229 74200	VR 100kΩ x2			1
	CAPACITORS				
C101	CD4 7 5250 0001V	Electrolytic	4.7μF	25V	1
C102	CC2 2 1500 KE00C	Ceramic	220pF	50V ±10%	1
C103	CD4 7 663A 0001V	Electrolytic	47μF	6.3V	1
C104	CM1 8 3500 K00SV	Mylar	0.018μF	50V ±10%	1
C105	CM4 7 2500 K00SV	Mylar	0.0047μF	50V ±10%	1
C106	CD1 0 5500 0001V	Electrolytic	1μF	50V	1
C122	CC4 7 1500 KE00C	Ceramic	470pF	50V ±10%	1
C123	CM1 8 3500 K00SV	Mylar	0.018μF	50V ±10%	1
C124	CD1 0 5500 0001V	Electrolytic	1μF	50V	1
C125	CC2 2 1500 KE00C	Ceramic	220pF	50V ±10%	1
C126	CC2 2 1500 KE00C	Ceramic	220pF	50V ±10%	1
C127	CC2 7 A500 DCH0R	Ceramic	2.7pF	50V ±0.5pF	1
C128	CC2 7 0500 JD00R	Ceramic	27pF	50V ±5%	1
C129	CD1 0 6250 0001V	Electrolytic	10μF	25V	1
C130	CD4 7 6350 0001V	Electrolytic	47μF	35V	1
C131	CD1 0 7350 0001V	Electrolytic	100μF	35V	1
C132	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C133	CD1 0 763A 0001V	Electrolytic	100μF	6.3V	1
C134	CD2 2 6250 0001V	Electrolytic	22μF	25V	1
C135	CD1 0 5500 0001V	Electrolytic	1μF	50V	1
C136	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C137	CC2 2 1500 KD00R	Ceramic	220pF	50V ±10%	1
C138	CC2 2 1500 KD00R	Ceramic	220pF	50V ±10%	1
C139	CC2 2 1500 KD00R	Ceramic	220pF	50V ±10%	1
C140	CC2 2 1500 KD00R	Ceramic	220pF	50V ±10%	1
C141	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C142	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C143	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C146	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C147	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C148	CC1 0 2500 KE00C	Ceramic	0.001μF	50V ±10%	1
C149	CC1 0 2500 KE00C	Ceramic	0.001μF	50V ±10%	1
C201	CD4 7 5250 0001V	Electrolytic	4.7μF	25V	1
C202	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C203	CD4 7 663A 0001V	Electrolytic	47μF	6.3V	1
C204	CM1 8 3500 K00SV	Mylar	0.018μF	50V ±10%	1
C205	CM4 7 2500 K00SV	Mylar	0.0047μF	50V ±10%	1
C206	CD1 0 5500 0001V	Electrolytic	1μF	50V	1
C222	CC4 7 1500 KE00C	Ceramic	470pF	50V ±10%	1
C223	CM1 8 3500 K00SV	Mylar	0.018μF	50V ±10%	1
C224	CD1 0 5500 0001V	Electrolytic	1μF	50V	1
C225	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C226	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C227	CC2 7 A500 DCH0R	Ceramic	2.7pF	50V ±0.5pF	1
C228	CC2 7 0500 JD00R	Ceramic	27pF	50V ±5%	1
C229	CD1 0 6250 0001V	Electrolytic	10μF	25V	1
C230	CD4 7 6350 0001V	Electrolytic	47μF	35V	1
C231	CD1 0 7350 0001V	Electrolytic	100μF	35V	1

Ref. No.	Part No.	Description			Q'ty
C232	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C233	CD1 0 763A 0001V	Electrolytic	100μF	6.3V	1
C234	CD2 2 6250 0001V	Electrolytic	22μF	25V	1
C235	CD1 0 5500 0001V	Electrolytic	1μF	50V	1
C236	CC2 2 1500 KD00R	Ceramic	220pF	50V ±10%	1
C237	CC2 2 1500 KD00R	Ceramic	220pF	50V ±10%	1
C238	CC2 2 1500 KD00R	Ceramic	220pF	50V ±10%	1
C239	CC2 2 1500 KD00R	Ceramic	220pF	50V ±10%	1
C240	CC2 2 1500 KD00R	Ceramic	220pF	50V ±10%	1
C241	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C242	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C243	CC2 2 1500 KD00C	Ceramic	220pF	50V ±10%	1
C246	CC2 2 1500 KD00R	Ceramic	220pF	50V ±10%	1
C247	CC2 2 1500 KD00R	Ceramic	220pF	50V ±10%	1
C248	CC1 0 2500 KE00C	Ceramic	0.001μF	50V ±10%	1
C249	CC1 0 2500 KE00C	Ceramic	0.001μF	50V ±10%	1
C301	CK2 2 4101 K000V	Mylar	0.22μF	100V ±10%	1
C302	CK2 2 4101 K000V	Mylar	0.22μF	100V ±10%	1
C303	CK2 2 4101 K000V	Mylar	0.22μF	100V ±10%	1
C304	CK2 2 4101 K000V	Mylar	0.22μF	100V ±10%	1
C305	CD3 3 8350 0005V	Electrolytic	3300μF	35V	1
C306	CD3 3 8350 0005V	Electrolytic	3300μF	35V	1
C307	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C308	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C309	CD1 0 5500 0001V	Electrolytic	1μF	50V	1
C310	CD1 0 5500 0001V	Electrolytic	1μF	50V	1
C313	CD4 7 6250 0001V	Electrolytic	47μF	25V	1
C314	CD4 7 6250 0001V	Electrolytic	47μF	25V	1
C315	CD4 7 6250 0001V	Electrolytic	47μF	25V	1
C401	CD4 7 6250 0001V	Electrolytic	47μF	25V	1
C402	CD2 2 6250 0001V	Electrolytic	22μF	25V	1
C404	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C405	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C406	CD1 0 7250 0001V	Electrolytic	100μF	25V	1
	SEMICONDUCTORS				
D101	205 5 9020 43010	Diode, DS 430			1
D102	202 5 3210 16012	Zener Diode, GZA 16 Y			1
D103	205 5 9040 44210	Diode, DS 442			1
D104	205 5 9040 44210	Diode, DS 442			1
D201	205 5 9020 43010	Diode, DS 430			1
D202	202 5 3210 16012	Zener Diode, GZA 16 Y			1
D203	205 5 9040 44210	Diode, DS 442			1
D204	205 5 9040 44210	Diode, DS 442			1
D301	202 5 3210 16012	Zener Diode, GZA 16 Y			1
D302	202 5 3210 16012	Zener Diode, GZA 16 Y			1
D303 ⚠	202 5 2570 02015	Bridge Diode, DBA 20			1
D401	205 5 9040 44210	Diode, DS 442			1
D402	205 5 9040 44210	Diode, DS 442			1
D409	202 5 2470 13540	Diode, DS 135 D			1
D410	202 5 3160 00110	Diode, GMA 01			1
IC401	IJJ - NJM072D-E	IC, NJM 072 D,E			1
IC403	206 5 4302 02510	IC, STK 2025 (Power Amp IC)			1
Q106	203 5 4921 01260	TR, 2SD 1012 F,G			1
Q107	203 5 7230 60860	TR, 2SA 608 F,G			1
Q108	203 5 5340 33250	FET, 2SK 332 E,F			1
Q109	203 5 4551 01615	TR, 2SA 1016 F,G			1
Q110	203 5 4532 36260	TR, 2SC 2362 F,G			1
Q111	203 5 4921 01260	TR, 2SD 1012 F,G			1
Q206	203 5 4921 01260	TR, 2SD 1012 F,G			1
Q207	203 5 7230 60860	TR, 2SA 608 F,G			1
Q208	203 5 5340 33250	FET, 2SK 332 E,F			1
Q209	203 5 4551 01615	TR, 2SA 1016 F,G			1
Q210	203 5 4532 36260	TR, 2SC 2362 F,G			1

PARTS LIST (Continued)

Ref. No.	Part No.	Description				Q'ty
Q211	203 5 4921 01260	TR, 2SD 1012 F,G				1
Q301	203 5 7330 61251	TR, 2SD 612K E,F				1
Q302	203 5 6840 56050	TR, 2SB 560 E,F				1
Q401	203 5 7230 60860	TR, 2SA 608 F,G				1
Q402	203 5 7230 60860	TR, 2SA 608 F,G				1
	RESISTORS					
R101	RD1 2 4161 JH000	Carbon	120kΩ	1/6W	±5%	1
R102	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R103	RD2 7 1161 JH000	Carbon	270Ω	1/6W	±5%	1
R104	RD2 2 4161 JH000	Carbon	220kΩ	1/6W	±5%	1
R105	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R106	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R107	RD5 6 2251 JM000	Carbon	5.6kΩ	1/4W	±5%	1
R134	RD3 3 3161 JH000	Carbon	33kΩ	1/6W	±5%	1
R135	RD1 5 4251 JM000	Carbon	150kΩ	1/4W	±5%	1
R136	RD5 6 1251 JM000	Carbon	560Ω	1/4W	±5%	1
R137	RD6 8 2251 JM000	Carbon	6.8kΩ	1/4W	±5%	1
R138	RD5 6 1251 JM000	Carbon	560Ω	1/4W	±5%	1
R139	RD6 8 2251 JM000	Carbon	6.8kΩ	1/4W	±5%	1
R140	RD6 8 2161 JH000	Carbon	6.8kΩ	1/6W	±5%	1
R141	RD1 0 1251 JM000	Carbon	100Ω	1/4W	±5%	1
R142	RD6 8 3251 JM000	Carbon	68kΩ	1/4W	±5%	1
R143	RD1 5 2161 JH000	Carbon	1.5kΩ	1/6W	±5%	1
R144	RD2 2 3251 JM000	Carbon	22kΩ	1/4W	±5%	1
R145	RD1 0 1251 JM000	Carbon	100Ω	1/4W	±5%	1
R146	RF1 0 1251 JK000	Mold	100Ω	1/4W	±5%	1
R147	RF8 2 0251 JK000	Mold	82Ω	1/4W	±5%	1
R148	RH1 0 0501 JZ000	Metal	10Ω	1/2W	±5%	1
R149	RD1 0 1251 JM000	Carbon	100Ω	1/4W	±5%	1
R152	RD5 6 1161 JH000	Carbon	560Ω	1/6W	±5%	1
R153	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R154	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R155	RD2 2 2161 JH000	Carbon	2.2kΩ	1/6W	±5%	1
R156	RD2 2 2161 JH000	Carbon	2.2kΩ	1/6W	±5%	1
R158	RD2 2 2251 JM000	Carbon	2.2kΩ	1/4W	±5%	1
R159	RD1 5 3251 JM000	Carbon	15kΩ	1/4W	±5%	1
R201	RD1 2 4161 JH000	Carbon	120kΩ	1/6W	±5%	1
R202	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R203	RD2 7 1161 JH000	Carbon	270Ω	1/6W	±5%	1
R204	RD2 2 4161 JH000	Carbon	220kΩ	1/6W	±5%	1
R205	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R206	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R207	RD5 6 2251 JM000	Carbon	5.6kΩ	1/4W	±5%	1
R234	RD3 3 3161 JH000	Carbon	33kΩ	1/6W	±5%	1
R235	RD1 5 4251 JM000	Carbon	150kΩ	1/4W	±5%	1
R236	RD5 6 1251 JM000	Carbon	560Ω	1/4W	±5%	1
R237	RD6 8 2251 JM000	Carbon	6.8kΩ	1/4W	±5%	1
R238	RD5 6 1251 JM000	Carbon	560Ω	1/4W	±5%	1
R239	RD6 8 2251 JM000	Carbon	6.8kΩ	1/4W	±5%	1
R240	RD6 8 2161 JH000	Carbon	6.8kΩ	1/6W	±5%	1
R241	RD1 0 1251 JM000	Carbon	100Ω	1/4W	±5%	1
R242	RD6 8 3251 JM000	Carbon	68kΩ	1/4W	±5%	1
R243	RD1 5 2251 JM000	Carbon	1.5kΩ	1/4W	±5%	1
R244	RD2 2 3251 JM000	Carbon	22kΩ	1/4W	±5%	1
R245	RD1 0 1251 JM000	Carbon	100Ω	1/4W	±5%	1
R246	RF1 0 1251 JK000	Mold	100Ω	1/4W	±5%	1
R247	RF8 2 0251 JK000	Mold	82Ω	1/4W	±5%	1
R248	RH1 0 0501 JZ000	Metal	10Ω	1/2W	±5%	1
R249	RD1 0 1251 JM000	Carbon	100Ω	1/4W	±5%	1
R252	RD5 6 1161 JH000	Carbon	560Ω	1/6W	±5%	1
R253	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R254	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R255	RD2 2 2161 JH000	Carbon	2.2kΩ	1/6W	±5%	1
R256	RD2 2 2161 JH000	Carbon	2.2kΩ	1/6W	±5%	1
R258	RD2 2 2251 JM000	Carbon	2.2kΩ	1/4W	±5%	1
R259	RD1 5 3251 JM000	Carbon	15kΩ	1/4W	±5%	1
R301	RF3 9 0501 JZ000	Mold	39Ω	1/2W	±5%	1
R302	RD2 7 1251 JS000	Carbon	270Ω	1/4W	±5%	1
R303	RD1 0 2251 JM000	Carbon	1kΩ	1/4W	±5%	1
R304	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R305	RF1 0 1251 JK000	Mold	100Ω	1/4W	±5%	1
R306	RF1 0 1251 JK000	Mold	100Ω	1/4W	±5%	1
R307	RF1 0 1251 JH000	Mold	100Ω	1/4W	±5%	1
R308	RF1 0 1251 JH000	Mold	100Ω	1/4W	±5%	1
R309	RF1 0 1251 JH000	Mold	100Ω	1/4W	±5%	1
R401	RD2 7 3161 JH000	Carbon	27kΩ	1/6W	±5%	1
R402	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R403	RD3 3 3251 JM000	Carbon	33kΩ	1/4W	±5%	1
R404	RD5 6 2161 JH000	Carbon	5.6kΩ	1/6W	±5%	1
R405	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R406	RD3 3 3161 JH000	Carbon	33kΩ	1/6W	±5%	1
R407	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R408	RD1 2 1251 JM000	Carbon	120Ω	1/4W	±5%	1
R409	RD2 7 2251 JM000	Carbon	2.7kΩ	1/4W	±5%	1
	GRAPHIC EQ. P.C.B.Assy					
	141 0 1939 00680	Graphic EQ. P.C.B.Assy				1
VR401	4 2222 03050	VR Slide 250kΩ-SW x2				1
VR402	4 2222 03050	VR Slide 250kΩ-SW x2				1
VR403	4 2222 03050	VR Slide 250kΩ-SW x2				1
VR404	4 2222 03050	VR Slide 250kΩ-SW x2				1
VR405	4 2222 03050	VR Slide 250kΩ-SW x2				1
VR406	4 2222 02820	VR Slide 200kΩ-G x2				1
	CAPACITORS					
C107	CD1 0 5500 0001V	Electrolytic	1μF	50V		1
C108	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C109	CC1 0 0500 KD00C	Ceramic	10pF	50V	±10%	1
C110	CD2 2 6250 0001V	Electrolytic	22μF	25V		1
C111	CD1 0 6500 0001V	Electrolytic	10μF	50V		1
C112	CD3 3 5500 0001V	Electrolytic	3.3μF	50V		1
C113	CM1 8 3500 K00SV	Mylar	0.018μF	50V	±10%	1
C114	CD3 3 4500 0001V	Electrolytic	0.33μF	50V		1
C115	CM8 2 2500 K00SV	Mylar	0.0082μF	50V	±10%	1
C116	CM8 2 3500 J00TV	Mylar	0.082μF	50V	±5%	1
C117	CM4 7 2500 K00SV	Mylar	0.0047μF	50V	±10%	1
C118	CM2 2 3500 K00SV	Mylar	0.022μF	50V	±10%	1
C119	CM1 2 2500 K00SV	Mylar	0.0012μF	50V	±10%	1
C120	CM4 7 2500 K00SV	Mylar	0.0047μF	50V	±10%	1
C121	CC6 8 1500 KE00C	Ceramic	680pF	50V	±10%	1
C144	CC2 2 1500 KD00R	Ceramic	220pF	50V	±10%	1
C145	CC2 2 1500 KD00R	Ceramic	220pF	50V	±10%	1
C207	CD1 0 5500 0001V	Electrolytic	1μF	50V		1
C208	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C209	CC1 0 0500 KD00C	Ceramic	10pF	50V	±10%	1
C210	CD2 2 6250 0001V	Electrolytic	22μF	25V		1
C211	CD1 0 6500 0001V	Electrolytic	10μF	50V		1
C212	CD3 3 5500 0001V	Electrolytic	3.3μF	50V		1
C213	CM1 8 3500 K00SV	Mylar	0.018μF	50V	±10%	1
C214	CD3 3 4500 0001V	Electrolytic	0.33μF	50V		1
C215	CM8 2 2500 K00SV	Mylar	0.0082μF	50V	±10%	1
C216	CM8 2 3500 J00TV	Mylar	0.082μF	50V	±5%	1
C217	CM4 7 2500 K00SV	Mylar	0.0047μF	50V	±10%	1
C218	CM2 2 3500 K00SV	Mylar	0.022μF	50V	±10%	1
C219	CM1 2 2500 K00SV	Mylar	0.0012μF	50V	±10%	1
C220	CM4 7 2500 K00SV	Mylar	0.0047μF	50V	±10%	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description				Q'ty
C221	CC6 8 1500 KE00C	Ceramic	680pF	50V	±10%	1
C244	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C245	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C311	CD4 7 6250 0001V	Electrolytic	47μF	25V		1
C312	CD4 7 6250 0001V	Electrolytic	47μF	25V		1
	SEMICONDUCTORS					
IC402	IJJ - NJM072D-E	IC, NJM 072 D,E				1
Q101	203 5 5000 53660	TR, 2SC 536 F,G				1
Q102	203 5 5000 53660	TR, 2SC 536 F,G				1
Q103	203 5 5000 53660	TR, 2SC 536 F,G				1
Q104	203 5 5000 53660	TR, 2SC 536 F,G				1
Q105	203 5 5000 53660	TR, 2SC 536 F,G				1
Q201	203 5 5000 53660	TR, 2SC 536 F,G				1
Q202	203 5 5000 53660	TR, 2SC 536 F,G				1
Q203	203 5 5000 53660	TR, 2SC 536 F,G				1
Q204	203 5 5000 53660	TR, 2SC 536 F,G				1
Q205	203 5 5000 53660	TR, 2SC 536 F,G				1
	RESISTORS					
R108	RD1 2 4251 JM000	Carbon	120kΩ	1/4W	±5%	1
R109	RD1 0 4251 JM000	Carbon	100kΩ	1/4W	±5%	1
R110	RD4 7 2161 JH000	Carbon	4.7kΩ	1/6W	±5%	1
R111	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R112	RD4 7 2161 JH000	Carbon	4.7kΩ	1/6W	±5%	1
R113	RD3 3 2161 JH000	Carbon	3.3kΩ	1/6W	±5%	1
R114	RD3 9 1161 JH000	Carbon	390Ω	1/6W	±5%	1
R115	RD1 2 2161 JH000	Carbon	1.2kΩ	1/6W	±5%	1
R116	RD1 2 4161 JH000	Carbon	120kΩ	1/6W	±5%	1
R117	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R118	RD3 9 1161 JH000	Carbon	390Ω	1/6W	±5%	1
R119	RD1 2 2161 JH000	Carbon	1.2kΩ	1/6W	±5%	1
R120	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R121	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R122	RD3 9 1161 JH000	Carbon	390Ω	1/6W	±5%	1
R123	RD1 5 2161 JH000	Carbon	1.5kΩ	1/6W	±5%	1
R124	RD3 9 3161 JH000	Carbon	39kΩ	1/6W	±5%	1
R125	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R126	RD3 9 1161 JH000	Carbon	390Ω	1/6W	±5%	1
R127	RD1 5 2161 JH000	Carbon	1.5kΩ	1/6W	±5%	1
R128	RD3 3 3161 JH000	Carbon	33kΩ	1/6W	±5%	1
R129	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R130	RD3 9 1161 JH000	Carbon	390Ω	1/6W	±5%	1
R131	RD1 5 2161 JH000	Carbon	1.5kΩ	1/6W	±5%	1
R132	RD2 2 3161 JH000	Carbon	22kΩ	1/6W	±5%	1
R133	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R157	RD2 2 2161 JH000	Carbon	2.2kΩ	1/6W	±5%	1
R208	RD1 2 4161 JH000	Carbon	120kΩ	1/6W	±5%	1
R209	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R210	RD4 7 2161 JH000	Carbon	4.7kΩ	1/6W	±5%	1
R211	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R212	RD4 7 2161 JH000	Carbon	4.7kΩ	1/6W	±5%	1
R213	RD3 3 2161 JH000	Carbon	3.3kΩ	1/6W	±5%	1
R214	RD3 9 1251 JM000	Carbon	390Ω	1/4W	±5%	1
R215	RD1 2 2161 JH000	Carbon	1.2kΩ	1/6W	±5%	1
R216	RD1 2 4161 JH000	Carbon	120kΩ	1/6W	±5%	1
R217	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R218	RD3 9 1251 JM000	Carbon	390Ω	1/4W	±5%	1
R219	RD1 2 2161 JH000	Carbon	1.2kΩ	1/6W	±5%	1
R220	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R221	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R222	RD3 9 1251 JM000	Carbon	390Ω	1/4W	±5%	1
R223	RD1 5 2161 JH000	Carbon	1.5kΩ	1/6W	±5%	1
R224	RD3 9 3161 JH000	Carbon	39kΩ	1/6W	±5%	1
R225	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R226	RD3 9 1251 JM000	Carbon	390Ω	1/4W	±5%	1
R227	RD1 5 2161 JH000	Carbon	1.5kΩ	1/6W	±5%	1
R228	RD3 3 3161 JH000	Carbon	33kΩ	1/6W	±5%	1
R229	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R230	RD3 9 1251 JM000	Carbon	390Ω	1/4W	±5%	1
R231	RD1 5 2161 JH000	Carbon	1.5kΩ	1/6W	±5%	1
R232	RD2 2 3161 JH000	Carbon	22kΩ	1/6W	±5%	1
R233	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R257	RD2 2 2161 JH000	Carbon	2.2kΩ	1/6W	±5%	1
	POWER SW. P.C.B.Assy					
	141 0 1939 00690	Power SW. P.C.B.Assy				1
⚠	4 2312 05710	SW. Push Power				1
	4 2312 05820	SW. Push 1 Key				1
	4 2352 01170	Jack 7P				1
	4 2372 00830	EC Terminal 1P				2
	111 2 6220 11100	Wire Wrap Terminal				2
	131 2 6114 00200	Cover Safety				1
	CAPACITOR					
C316	⚠ 4 2239 70970	Ceramic	0.01μF	400V		1
	RESISTORS					
R150	RH3 3 1501 JZ000	Metal	330Ω	1/2W	±5%	1
R151	RD2 7 1251 JM000	Carbon	270Ω	1/4W	±5%	1
R250	RH3 3 1501 JZ000	Metal	330Ω	1/2W	±5%	1
R251	RD2 7 1251 JM000	Carbon	270Ω	1/4W	±5%	1

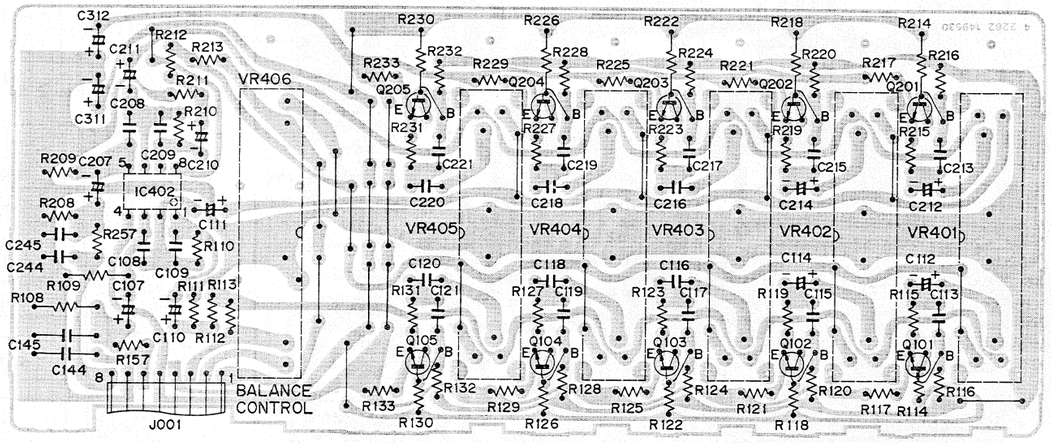
PARTS LIST (Continued)

Ref. No.	Part No.	Description				Q'ty
	LEVEL METER P.C.B.Assy					
	141 0 1939 00700	Level Meter P.C.B.Assy				1
	131 2 4208 41800	Spacer				5
	CAPACITOR					
C403	CD1 0 6250 0001V	Electrolytic	10μF	25V		1
	SEMICONDUCTORS					
D403	D00 - SLP- 173B-	LED, SLP 173 B				1
D404	D00 - SLP- 173B-	LED, SLP 173 B				1
D405	D00 - SLP- 173B-	LED, SLP 173 B				1
D406	D00 - SLP- 173B-	LED, SLP 173 B				1
D407	D00 - SLP- 173B-	LED, SLP 173 B				1
IC404	206 5 2291 42310	IC, LB 1423 (LED-Drive)				1
	RESISTORS					
R415	RD2 2 A161 JH000	Carbon	2.2Ω	1/6W	±5%	1
R416	RD2 2 A161 JH000	Carbon	2.2Ω	1/6W	±5%	1
R417	RD5 6 1161 JH000	Carbon	560Ω	1/6W	±5%	1
R418	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1

Ref. No.	Part No.	Description				Q'ty
	POWER IND. P.C.B.Assy					
	141 0 1939 00710	Power IND. P.C.B.Assy				1
	131 2 4208 41300	Spacer (LED)				1
	SEMICONDUCTOR					
D408	4 2029 72101	LED, GL 9 PR				1
	RESISTOR					
R419	RD1 8 2251 JM000	Carbon	1.8kΩ	1/4W	±5%	1
	VOLTAGE SW. P.C.B.Assy					
	141 0 1939 00720	Voltage SW. P.C.B.Assy				1

NOTES:
1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

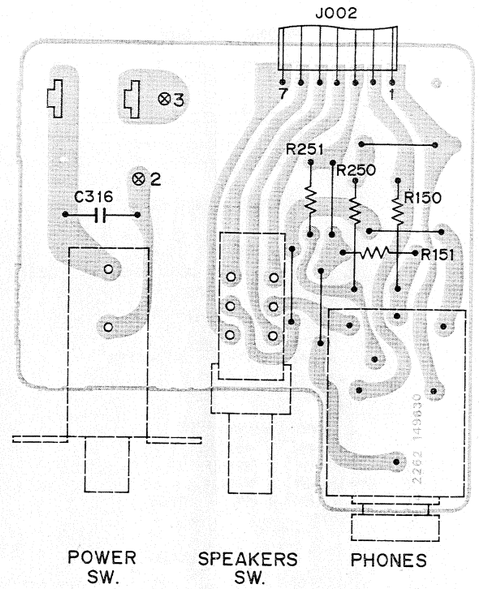
GRAPHIC EQUALIZER P.C.BOARD
(BOTTOM VIEW)



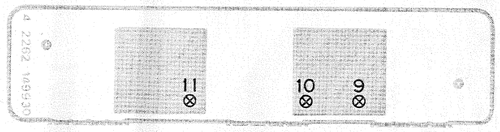
IC PIN NUMBERS DC VOLTAGES									
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8
IC402	NJM 072	0V	0V	0V	−14.7V	0V	0V	0V	15.2V

TRANSISTOR DC VOLTAGES									
SYMBOL No.	DEVICE	B	C	E	SYMBOL No.	DEVICE	B	C	E
Q101,201	2SC 536	−0.4V	14.9V	−1.0V	Q104,204	2SC 536	−0.3V	14.9V	−0.7V
Q102,202	2SC 536	−0.4V	14.9V	−1.0V	Q105,205	2SC 536	−0.1V	14.9V	−0.7V
Q103,203	2SC 536	−0.3V	14.9V	−0.7V					

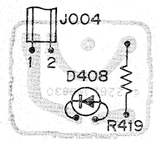
POWER SW. P.C.BOARD
(BOTTOM VIEW)



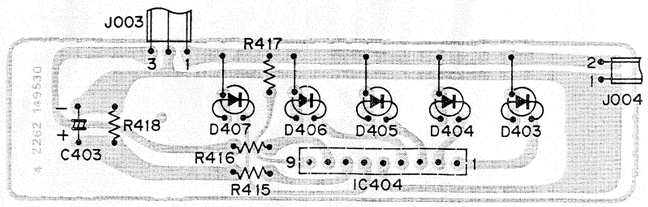
VOLTAGE SW. P.C.BOARD
(BOTTOM VIEW)



POWER IND. P.C.BOARD
(BOTTOM VIEW)



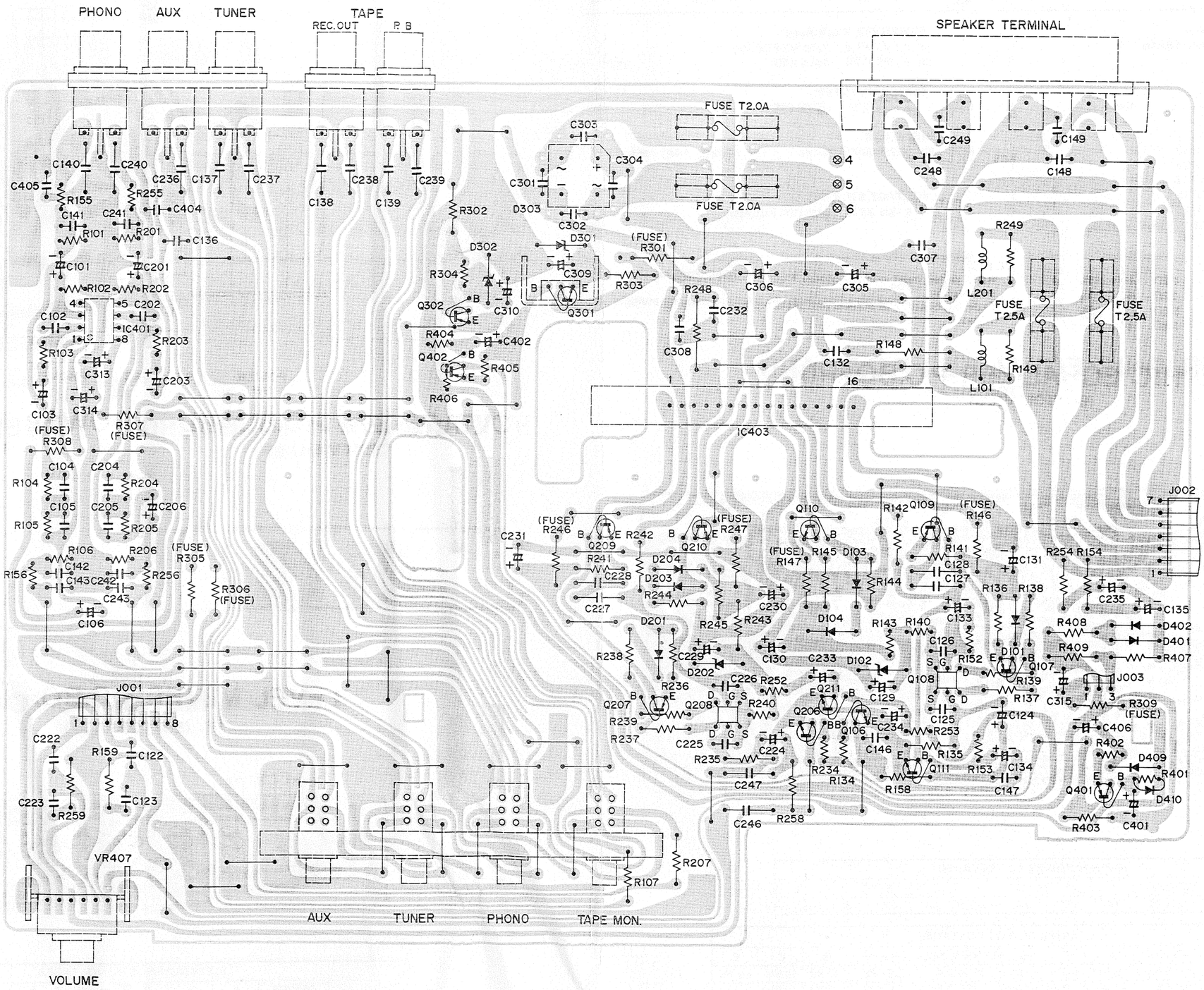
LEVEL METER P.C.BOARD
(BOTTOM VIEW)



IC PIN NUMBERS DC VOLTAGES										
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9
IC404	LB 1423	13.7V	13.7V	13.7V	13.7V	0V	13.7V	–	–	12.4V

MAIN AMPLIFIER P.C.BOARD

(BOTTOM VIEW)



TRANSISTOR DC VOLTAGES

SYMBOL No.	DEVICE	B	C	E
Q107,207	2SA 608	30V	30V	30.7V
Q108,208	2SK 332	0V	21.5V	0.26V
Q109,209	2SA 1016	30V	1V	30.7V

SYMBOL No.	DEVICE	B	C	E
Q302	2SB 560	−16.7V	−25.5V	−16.1V
Q401	2SA 608	16V	0V	16.3V
Q402	2SA 608	11.7V	12.4V	12.5V

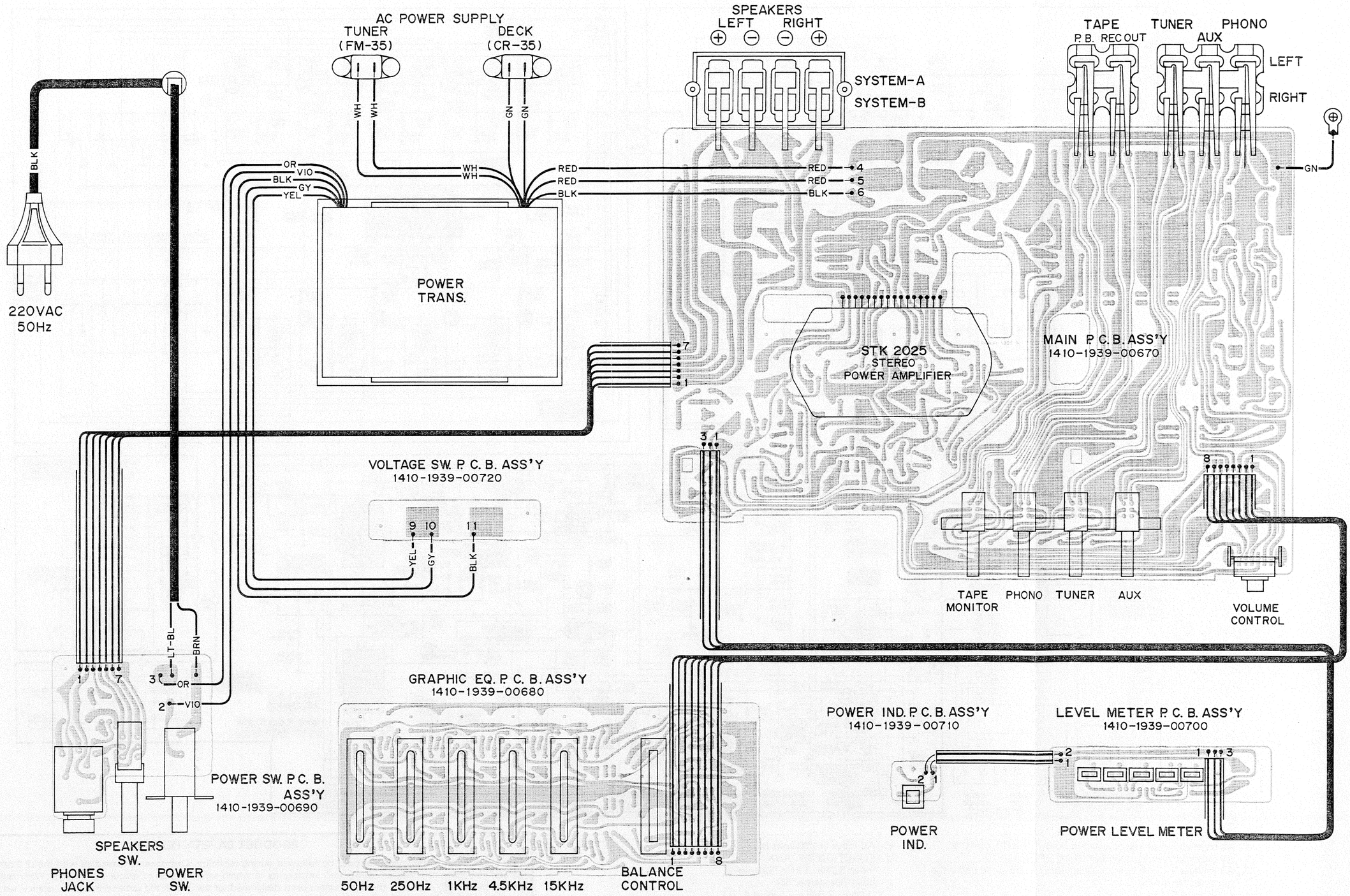
SYMBOL No.	DEVICE	B	C	E
Q110,210	2SC 2362	29.5V	−1.2V	−30.2V
Q111,211	2SD 1012	0.67V	0V	0V
Q301	2SD 612	17V	30.3V	16.5V

IC PIN NUMBERS DC VOLTAGES

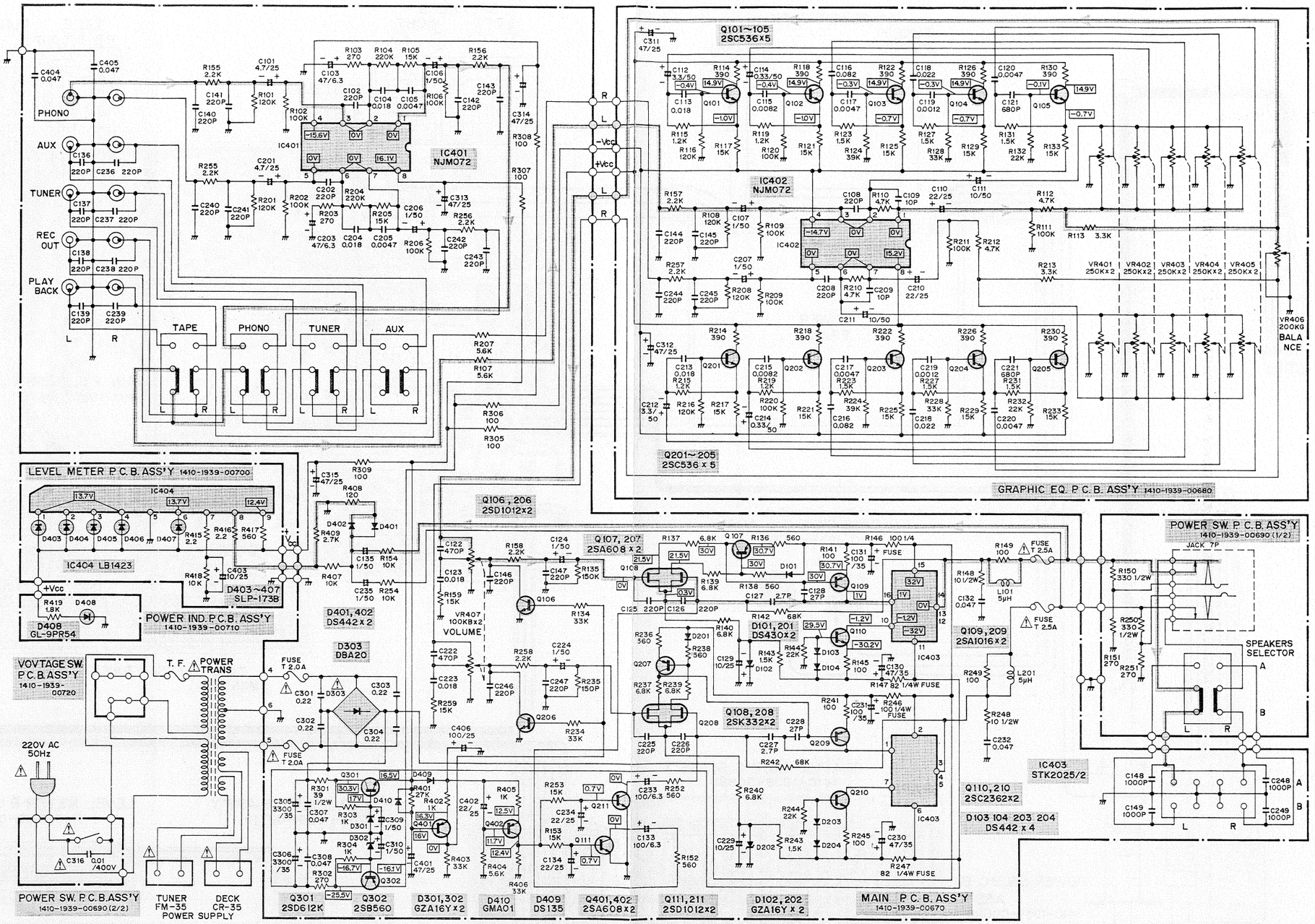
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8
IC401	NJM 072	0V	0V	0V	−15.6V	0V	0V	0V	16.1V
IC403	STK 2025	1V	32V	0V	—	—	−32V	−1.2V	—

9	10	11	12	13	14	15	16
—	−1.2V	−32V	0V	—	—	32V	1V

POINT TO POINT WIRING DIAGRAM



SCHEMATIC DIAGRAM



NOTES:

1. All resistors values are indicated in "ohm" (K=10^3, M=10^6).
2. All capacitors values are indicated in "μF" (P=10^{-12}).
3. All voltages indicated on the schematics are measured under the following conditions.
   a. Use a V.T.V.M.
   b. All voltages ±10% with respect to chassis ground
   c. AC input at 220 volts 50 Hz
   d. FUNCTION SW: AUX
   e. Input Signal: 1 kHz (Sine-wave)
   f. Load Resistance: 8Ω
      Output: 2.5 W + 2.5 W (4.47 V)
4. This is a basic schematic diagram.

Because Fisher products are subject to continuous improvement, Fisher Corporation reserves the right to make any changes or modifications without notice.

PRODUCT SAFETY NOTICE

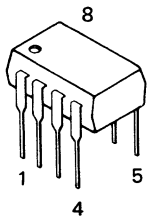
Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.

Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

SEMICONDUCTOR LEAD IDENTIFICATION

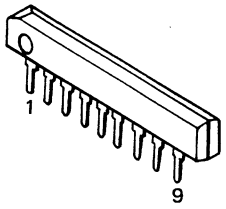
INTEGRATED CIRCUITS

DC AMP IC



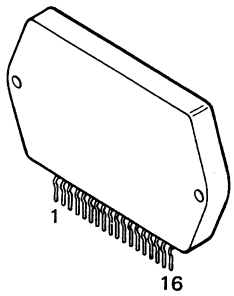
- NJM 072

LEVEL METER IC



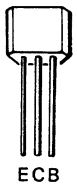
- LB 1423

POWER AMPLIFIER IC



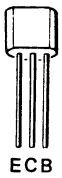
- STK 2025

TRANSISTORS

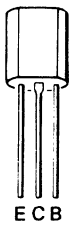


- 2SD 1012

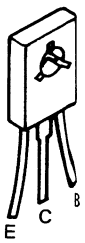
- 2SK 332



- 2SC 536
- 2SC 2362
- 2SA 1016
- 2SA 608

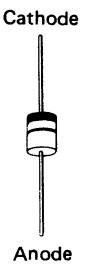


- 2SB 560

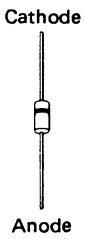


- 2SD 612K

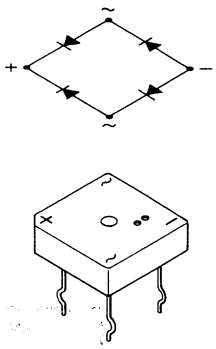
DIODES



- DS 135D



- DS 430
- GZA 16Y
- GMA 01



- DBA 20